



MACOMBER

Nailable

STEEL JOISTS

A. I. A. File Number 13G



4 TO 44' SPANS

ORIGINATORS OF THE

OPEN WEB STEEL JOIST

STANDARDIZED STEEL
V BAR JOISTS • LONGSPANS



BUILDING PRODUCTS
STEEL TRUSSES • STEEL DECK

MACOMBER INCORPORATED

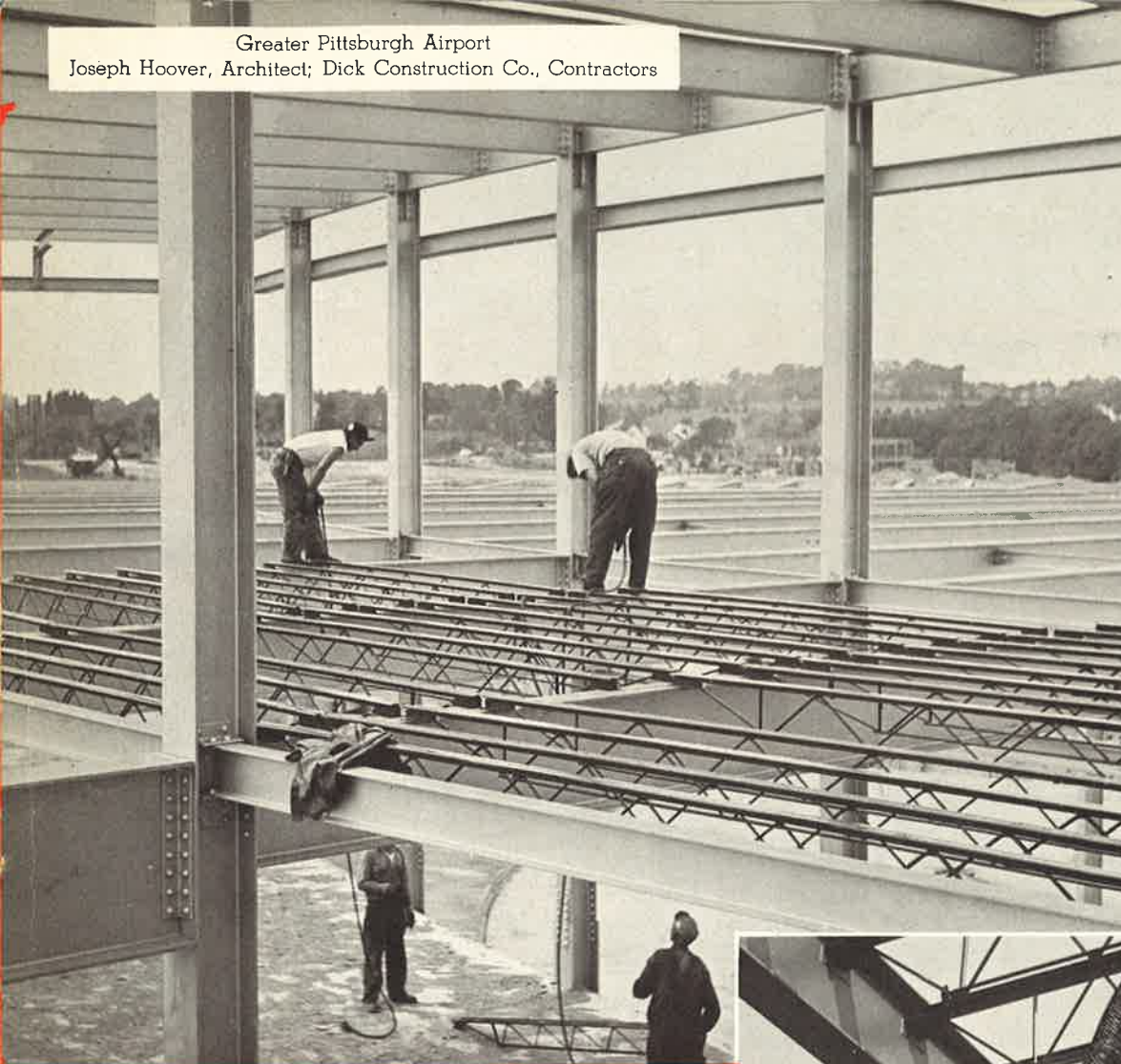
CANTON 1, OHIO

Greater Pittsburgh Airport
Joseph Hoover, Architect; Dick Construction Co., Contractors

This is



A SOLID ANCHOR
FOR METAL LATH



THE *Nailable*



STEEL JOIST

PAGE TWO



THEY COST NO MORE

THEY SAVE SO MUCH

the **ONE** Steel Joist –

Job Engineered

● **FOR SPECIFIC STRUCTURAL REQUIREMENTS**

1. This is the only **NAILABLE** Open Web Steel Joist on the market.
2. It is therefore the **ONLY** Steel Joist made that will fit any job requirement **WHEN DELIVERED** because no wood nailers have to be bought and attached at the factory or on the job.
3. Macomber makes not just one type of Steel Joist—but **FOUR**—each **JOB ENGINEERED** to meet your specific floor and ceiling requirements more economically.
4. Since the metal lath is nailed directly and permanently to each joist at each rib, this solid anchoring prevents excessive sagging of lath and deep pockets of concrete between joists.
5. Nailing is more positive and much faster than the tedious method of wiring lath throughout an entire floor area. So—you save not only hours of labor but tons of concrete when you specify Macomber.



SUB PURLINS WELDED TO
THE WIDE FLAT SURFACE OF
MACOMBER V JOISTS SPACED
FOR SHEET ROCK AND A
POURED GYPSUM DECK.

HOW YOU CAN

COMPLETED
WAREHOUSE



THE POURED GYPSUM
DECK SUPPORTED
BY MACOMBER
STEEL JOISTS

SUBJECT NORWALK TRUCK TERMINAL
OWNER NORWALK TRUCKING COMPANY
ARCHITECT BENNETT & STRAIGHT
CONTRACTOR KARL B. FOSTER

HOW

MACOMBER

Available

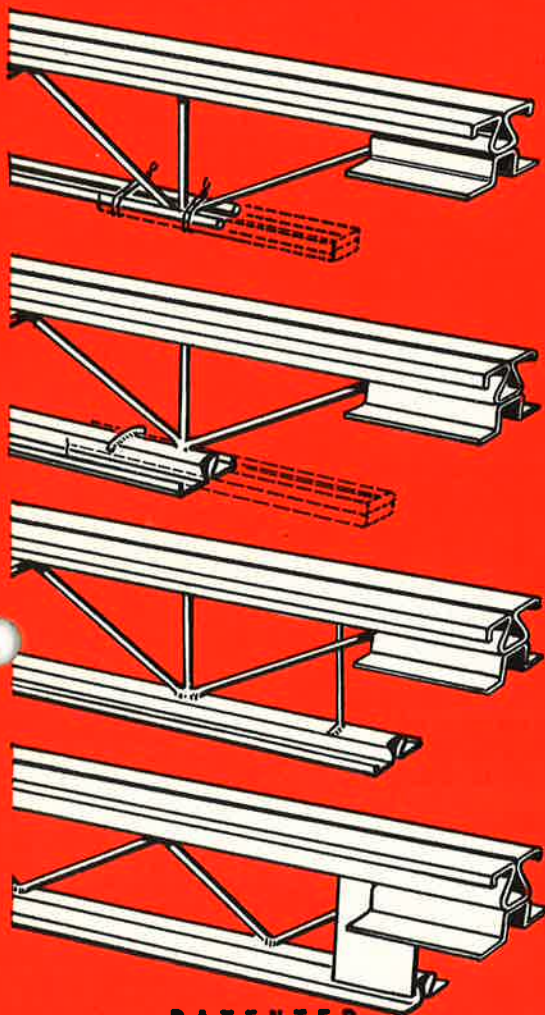
STEEL JOISTS

SERVE

architects, engineers, contractors

REDUCE COSTS WITH MACOMBER

Job Engineered



PATENTED

STEEL JOIST TYPES

THE MACOMBER V JOIST

Specify this standard V Bar Joist to support any flooring or roofing material. The faster labor saving convenience of nailing reduces man hours per floor area. The wide flat surface is also ideal for welding or anchoring decking.

THE MACOMBER VS JOIST

Specify this type with Nailable Top and Bottom chords where a ceiling is to be attached. No. 7 Screw Gage drive nails are used for attaching any ceiling material to the bottom chord. Note welded lock bar securing ceiling extension.

THE MACOMBER VV JOIST

The VV Joist with Nailable Top and Bottom chords fits right up to wall, requiring no ceiling extensions. This joist has been in universal use for many years in school and commercial work, requiring fireproofed, acoustical ceilings.

THE MACOMBER STOCK JOIST

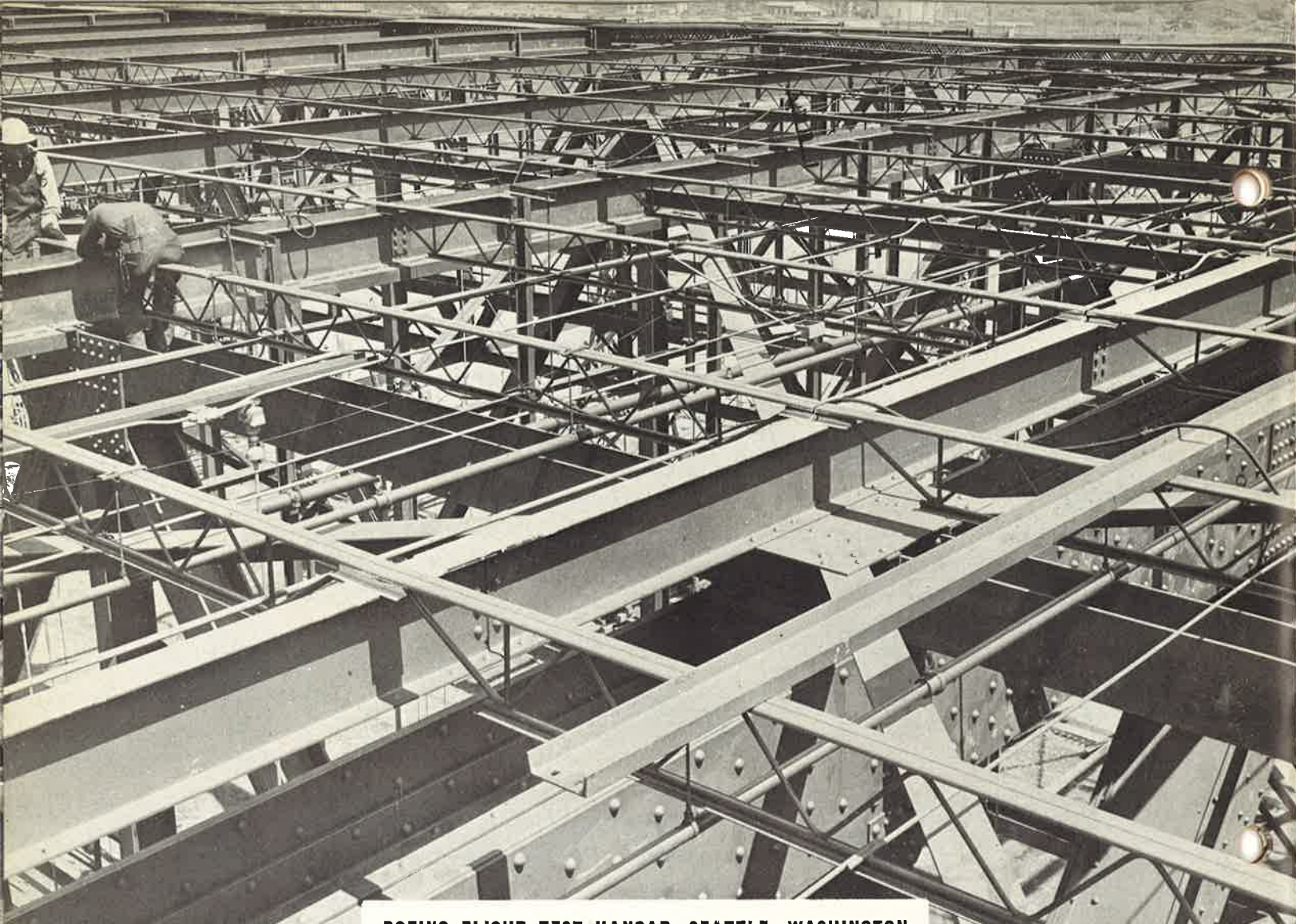
The Stock Joist is processed to length on short notice from warehouse stocks, coast to coast. A sturdy unit with nailable top and bottom chords, requiring no ceiling extensions, available either for standard construction or emergency conditions.

NOT JUST ONE JOIST — BUT THE TYPE ESPECIALLY DESIGNED TO MEET YOUR NEEDS MORE ECONOMICALLY

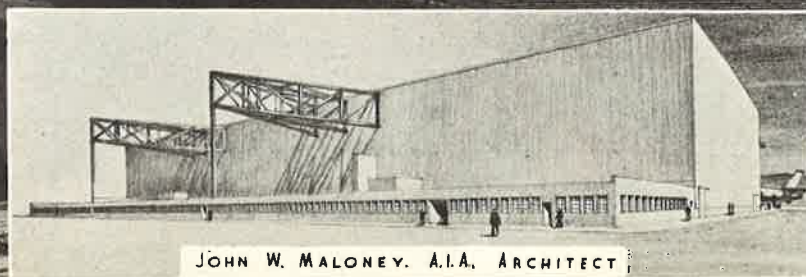
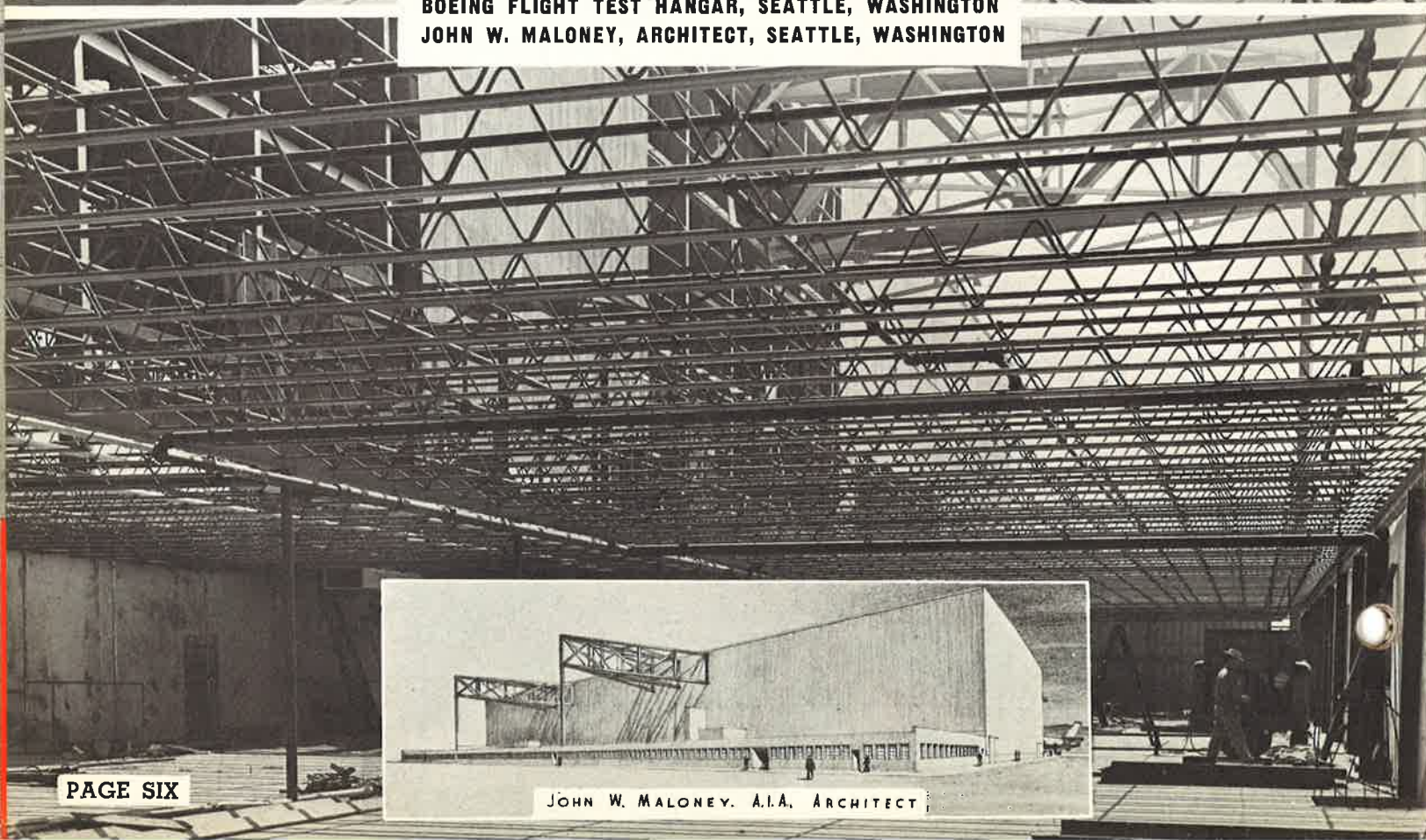
PATENTED
U. S. Patent Nos.
2,184,113
2,457,250
2,457,056
2,624,430
2,662,272
AND PATENTS PENDING

*These Exclusive Structural Advantages
are available ONLY in
Macomber Steel Joists
and Protected by
U. S. Patents*

MACOMBER V SECTIONS



BOEING FLIGHT TEST HANGAR, SEATTLE, WASHINGTON
JOHN W. MALONEY, ARCHITECT, SEATTLE, WASHINGTON



JOHN W. MALONEY, A.I.A., ARCHITECT



**THE RIB IS
FLATTENED**

ONE...

ONE SECOND—to flatten rib
over nailing groove.

NO DEEP POCKETS BETWEEN JOISTS


Nailability **GIVES YOU** *Speed*

TWO... TWO SECONDS—to place
nail and start drive.



**THE NAIL
IS
STARTED**

LESS TIME AND LABOR PER FASTENING



**THE LATH
IS
ANCHORED**

THREE!

BANG! and the nail is driven
home—a solid anchor to save
tons of concrete.

TOP LATH IS SECURELY ANCHORED

IS **SPEED** OF ANY CONSEQUENCE TO AN ARCHITECT OR STRUCTURAL ENGINEER?

SPEED is the total labor hours you save on any part of a job in contrast to usual work schedules.

Is speed ONLY the concern of the general contractor or is this cost factor related to the design-engineering-specifying function of the architectural firm or consulting engineer?

ANY PRODUCT basically designed to save man hours and reduce material costs to the point construction costs can be lowered and better controlled—answers that question—and places a direct responsibility on the specifying team.

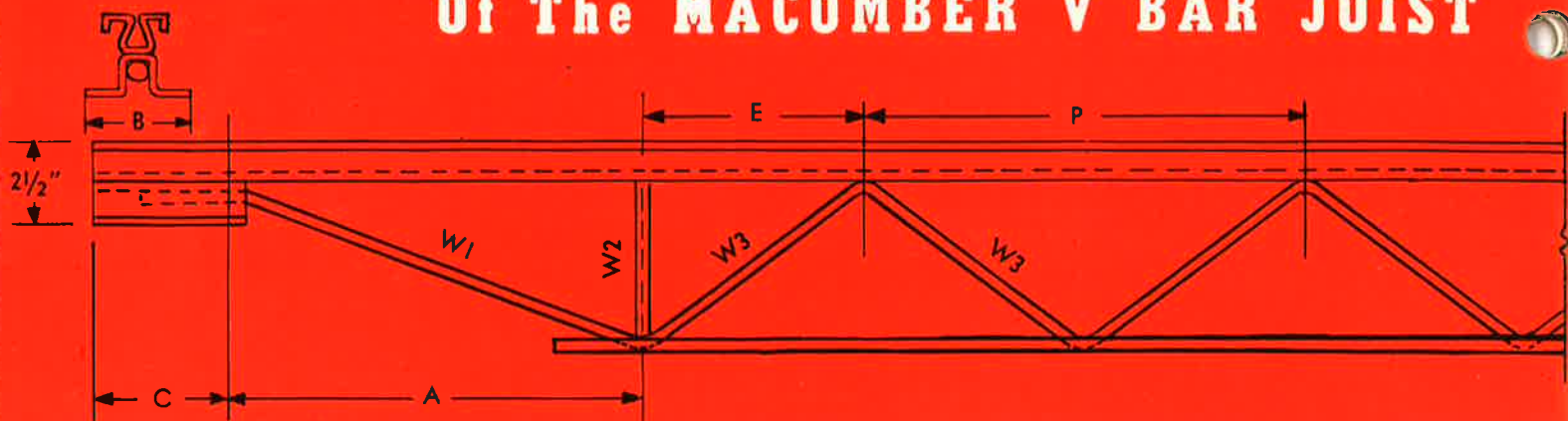
When metal lath is nailed through the rib, the operation is faster than other methods and the solid anchor prevents tons of wasted concrete from sagging down into pockets between joists.

To any contractor who has used Macomber Nailable Steel Joists—there is no "or equal" any specification writer can name.



Top Lath is securely anchored in a Non-Slip Fastening

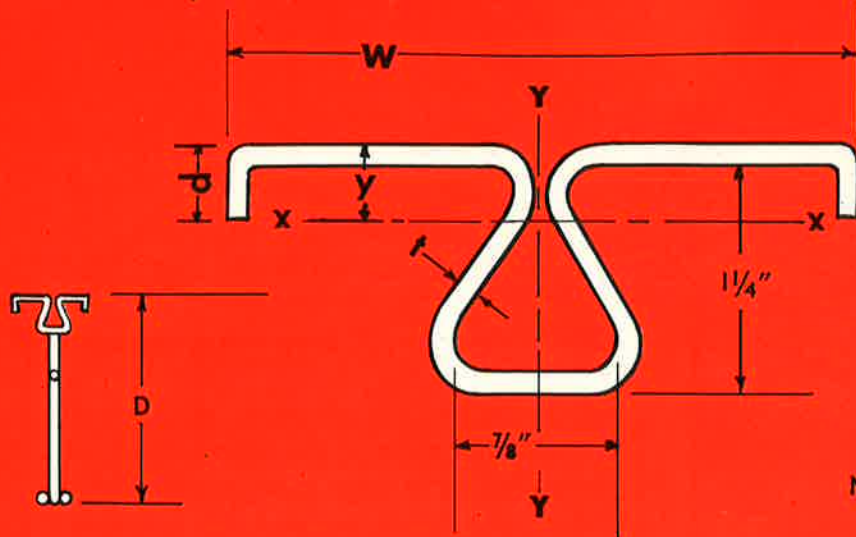
Dimensions and Properties Of The MACOMBER V BAR JOIST



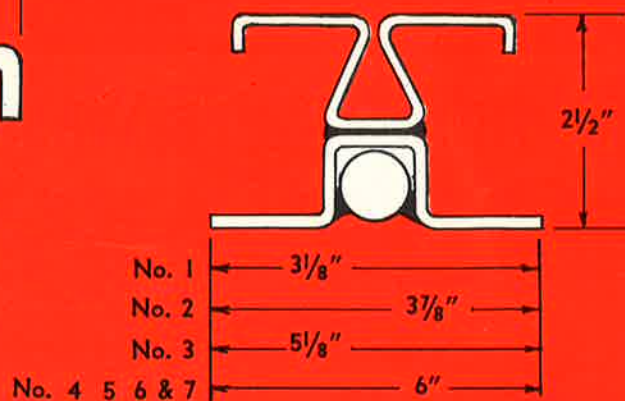
DIMENSIONS AND SECTIONS

Joist Designation	Nominal Depth D	Effective Depth	Top Chord Section No.	Bottom Chord 2 Rd. Bars		Web Member W1 One Rd. Bar		Web Member W2 One Rd. Bar		Web Member W3 One Rd. Bar		Other Web Members One Rd. Bar		A Varies with Span		B	C	E	P
				Diam.	Area	Diam.	Area	Diam.	Area	Diam.	Area	Diam.	Area	Min.	Max.				
81	8	7.403	1	.400	.250	.500	.196	.620	.302	.500	.196	.450	.159	14	28	3.125	6	12	24
82	8	7.528	2	.500	.393	.620	.302	.620	.302	.570	.255	.450	.159	14	28	3.125	6	12	24
101	10	9.278	1	.400	.250	.500	.196	.620	.302	.500	.196	.500	.196	14	28	3.125	6	12	24
102	10	9.403	2	.500	.393	.570	.255	.620	.302	.570	.255	.450	.159	14	28	3.125	6	12	24
103	10	9.468	3	.570	.510	.620	.302	.620	.302	.570	.255	.450	.159	14	28	3.125	6	12	24
104	10	9.482	4	.620	.604	.670	.353	.620	.302	.620	.302	.500	.196	14	28	3.875	6	12	24
122	12	11.403	2	.500	.393	.570	.255	.620	.302	.570	.255	.500	.196	14	28	3.875	6	12	24
123	12	11.343	3	.570	.510	.620	.302	.620	.302	.620	.302	.500	.196	14	28	3.875	6	12	24
124	12	11.357	4	.620	.604	.670	.353	.620	.302	.620	.302	.500	.196	14	28	3.875	6	12	24
125	12	11.385	5	.670	.706	.670	.353	.620	.302	.620	.302	.570	.255	14	28	3.875	6	12	24
126	12	11.441	6	.740	.860	.740	.430	.620	.302	.670	.353	.570	.255	14	28	5.125	6	12	24
143	14	13.339	3	.570	.510	.620	.302	.740	.430	.620	.302	.570	.255	14	28	5.125	6	12	24
144	14	13.357	4	.620	.604	.670	.353	.740	.430	.620	.302	.570	.255	14	28	5.125	6	12	24
145	14	13.385	5	.670	.706	.670	.353	.740	.430	.670	.353	.570	.255	14	28	5.125	6	12	24
146	14	13.441	6	.740	.860	.740	.430	.740	.430	.670	.353	.620	.302	14	28	5.125	6	12	24
147	14	13.503	7	.810	1.031	.740	.430	.740	.430	.740	.430	.620	.302	14	28	5.125	6	12	24
164	16	15.357	4	.620	.604	.620	.302	.740	.430	.620	.302	.620	.302	14	28	5.125	6	12	24
165	16	15.385	5	.670	.706	.670	.353	.740	.430	.670	.353	.620	.302	14	28	5.125	6	12	24
166	16	15.441	6	.740	.860	.670	.353	.740	.430	.740	.430	.620	.302	14	28	5.125	6	12	24
167	16	15.503	7	.810	1.031	.740	.430	.740	.430	.740	.430	.670	.353	14	28	5.125	6	12	24
168	16	15.686	8	.875	1.203	.740	.430	.740	.430	.740	.430	.670	.353	14	28	5.125	6	12	24
185	18	17.385	5	.670	.706	.670	.353	.740	.430	.740	.430	.670	.353	14	28	5.125	6	12	24
186	18	17.441	6	.740	.860	.740	.430	.740	.430	.740	.430	.670	.353	14	28	5.125	6	12	24
187	18	17.503	7	.810	1.031	.740	.430	.740	.430	.740	.430	.670	.353	14	28	5.125	6	12	24
188	18	17.749	8	.875	1.203	.740	.430	.740	.430	.740	.430	.670	.353	14	28	5.125	6	12	24
206	20	19.441	6	.740	.860	.740	.430	.740	.430	.740	.430	.740	.430	14	28	5.125	6	12	24
207	20	19.503	7	.810	1.031	.740	.430	.740	.430	.740	.430	.740	.430	14	28	5.125	6	12	24
208	20	19.686	8	.875	1.203	.740	.430	.740	.430	.810	.516	.740	.430	14	28	5.125	6	12	24
227	22	21.503	7	.810	1.031	.740	.430	.810	.516	.810	.516	.810	.516	14	28	6.000	6	12	24
228	22	21.686	8	.875	1.203	.740	.430	.810	.516	.875	.601	.810	.516	14	28	6.000	6	12	24

ALL DIMENSIONS SUBJECT TO SLIGHT MILL AND MANUFACTURING TOLERANCES



BEARING PLATE SIZES



Sect. No.	Area	y	t	W	d	About Axis X-X		About Axis Y-Y	
						l	r	l	r
	In. ²	In.	In.	In.	In.	Inches ⁴	Inches	Inches ⁴	Inches
1	.364	.547	.067	2 1/4	7/16	.090	.498	.078	.462
2	.476	.472	.075	2 13/16	7/16	.119	.495	.225	.683
3	.612	.442	.089	3 1/16	7/16	.144	.490	.415	.832
4	.715	.453	.104	3 3/16	7/16	.174	.492	.499	.833
5	.836	.450	.117	3 11/16	1 1/16	.203	.493	.658	.887
6	1.025	.429	.131	4 3/16	3/4	.241	.485	1.115	1.043
7	1.223	.402	.145	5 1/8	7/8	.274	.475	1.918	1.255
8	1.45	.376	.145	5 7/8	7/8	.299	.477	4.32	1.70

All dimensions subject to slight mill and manufacturing tolerances.

BEARING PLATE INFORMATION

For Joists No. 81, 82, 101, 102 and 103 Plate No. 1 is used. Purlins of this same size have Plate No. 4.

For Joists No. 104, 122, 123, 124 and 125, Plate No. 2 is used. For Purlins this size, Plate No. 5, holes punched.

For Joists No. 126, 143, 144, 145, 146, 147, 164, 165, 166, 167, 168, 185, 186, 187, 188, 206, 207 and 208 No. 3 Plate is used. Corresponding Purlin Plate is No. 6 punched.

For Joists No. 227 and 228 Plate No. 7 is used. Purlins of this size take Plate No. 6 punched.

MACOMBER V STRUCTURAL SECTIONS

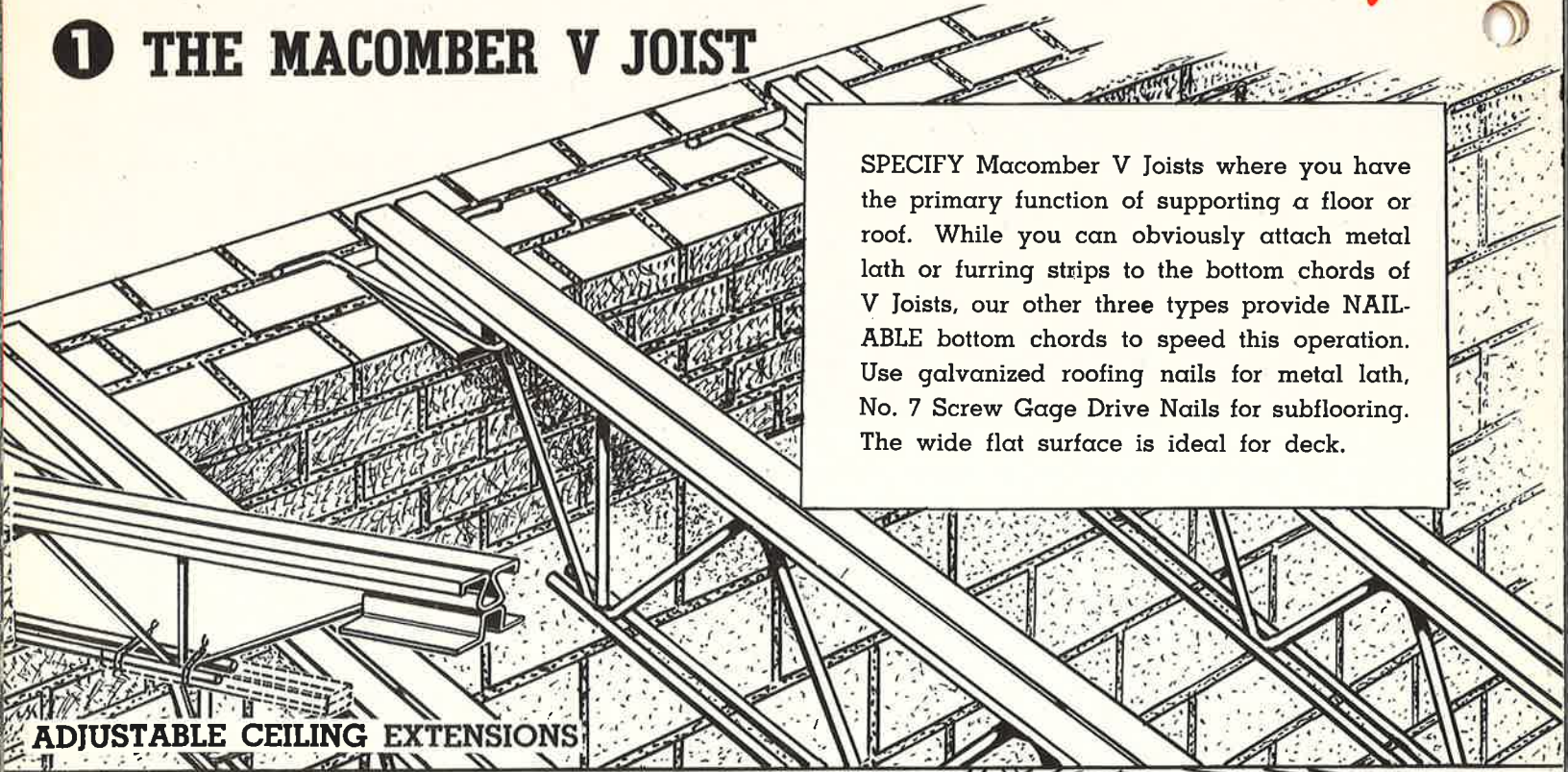


**A DEPENDABLE RUGGED COLD
ROLLED STRUCTURAL UNIT
FOR LIGHT STEEL FABRICATION**

AN ANALYSIS OF MACOMBER JOIST TYPES

For the Buyer

① THE MACOMBER V JOIST



A detailed technical drawing showing the installation of Macomber V Joists. The joists are shown in a perspective view, with their V-shaped top and flat bottom surfaces clearly visible. They are supported by a brick wall on the left. A text box on the right provides specifications for their use. The drawing includes lines for furring strips and ceiling extensions.

SPECIFY Macomber V Joists where you have the primary function of supporting a floor or roof. While you can obviously attach metal lath or furring strips to the bottom chords of V Joists, our other three types provide NAILABLE bottom chords to speed this operation. Use galvanized roofing nails for metal lath, No. 7 Screw Gage Drive Nails for subflooring. The wide flat surface is ideal for deck.

ADJUSTABLE CEILING EXTENSIONS

② THE MACOMBER VS JOIST



A detailed technical drawing showing the installation of Macomber VS Joists. The joists are shown in a perspective view, with their V-shaped top and flat bottom surfaces clearly visible. They are supported by a brick wall on the left. A text box on the right provides specifications for their use. The drawing includes lines for furring strips and ceiling extensions.

FURRING STRIPS NAILED TO BOTTOM CHORD

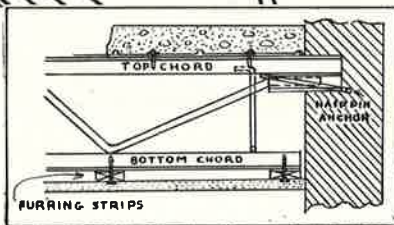
SPECIFY Macomber VS Joists where you can take advantage of the nailable top and bottom chords—a floor or roof with attached ceiling below. In this illustration furring strips are nailed to bottom chord and Lock Bar shown at left will secure ceiling extension to wall or beam. There is a saving in weight and cost on many of your common spans. Investigate these VS Joist savings before you specify.

VS JOIST LOCK BAR EXTENSION

THE ONE BEST JOIST FOR YOUR JOB

③ THE MACOMBER VV JOIST

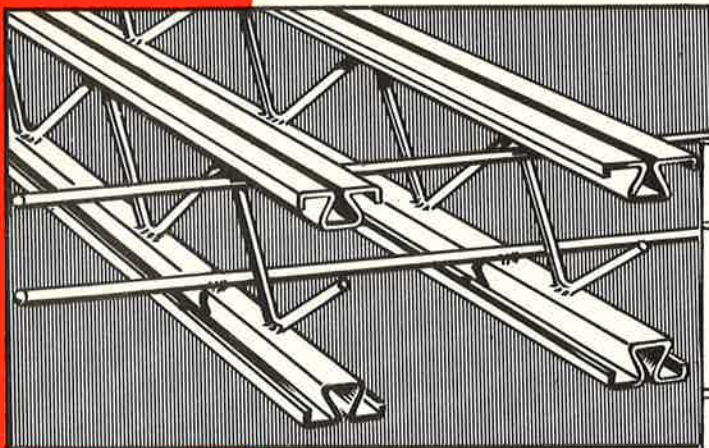
SPECIFY Macomber VV Joists where you are supporting a floor or roof with an attached ceiling below. Note that the bottom chord of "Double V" Joists comes right up to the wall line—requiring no ceiling extensions. This Joist has been in general use for all types of structures since 1947—one year after the V Joist was announced—to provide the demand for the same nailing convenience in bottom chords.



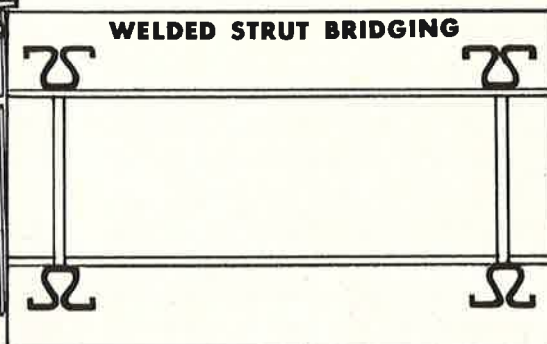
④ THE MACOMBER STOCK JOIST

This Macomber Joist is processed to length from 60 foot stock carried in depths from 8 to 22 inches for fast delivery—coast to coast. Macomber processors located in strategic cities can make deliveries for emergency needs or standard building operations. Note that Stock Joists do not require ceiling extensions. Available in place of wood joists for home construction on short notice.

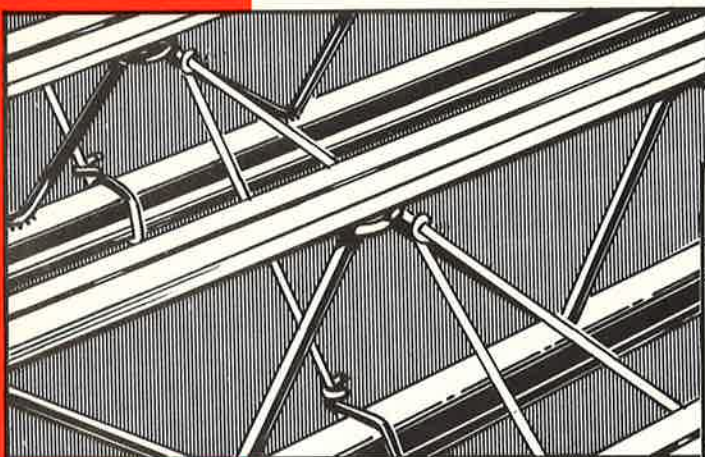
Bridging MACOMBER STEEL JOISTS



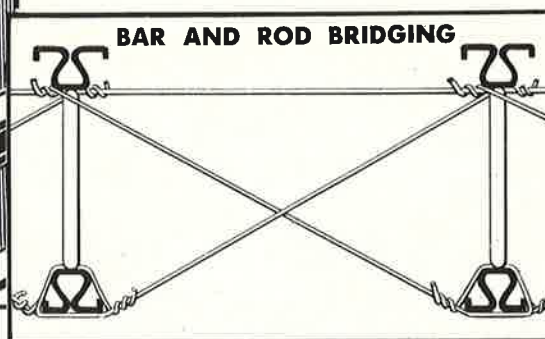
The type of bridging most preferred is the welded continuous strut consisting of half-inch bars welded to top and bottom chords as shown opposite.



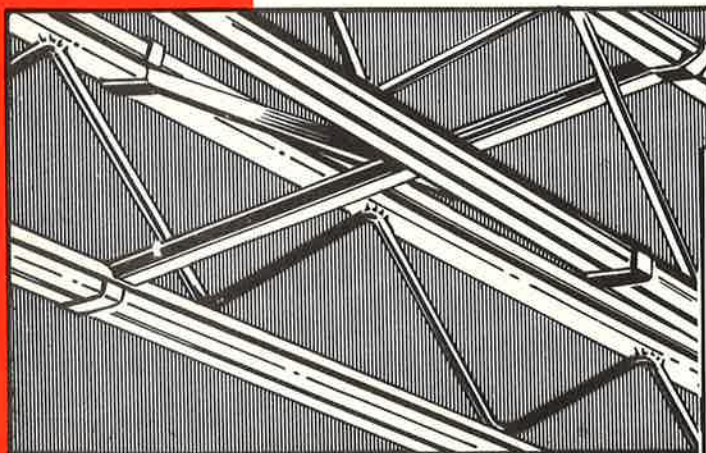
**1st
Choice**



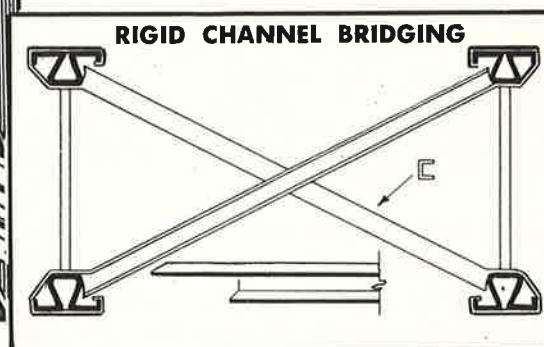
This tension type of bridging consists of a $\frac{1}{2}$ " round bar top chord strut with $\frac{3}{8}$ " round rod diagonals securely attached by wrapping with a special bridging tool.



**2nd
Choice**



Channel bridging providing both tension and compression consists of $\frac{3}{8}$ inch cold formed channel diagonals with positive locking strap as shown.



**3rd
Choice**

The importance of proper alignment and bracing of joists during the construction period cannot be over emphasized. This is accomplished by installing the anchors and bridging immediately after the joists are placed and before any construction loads are applied. The 3 types of bridging shown above are adequate to safely support the top chord flanges against lateral movement during the installation period before completion of the floor construction. Lateral bridging lines should be anchored to wall or beam with the standard anchors provided.

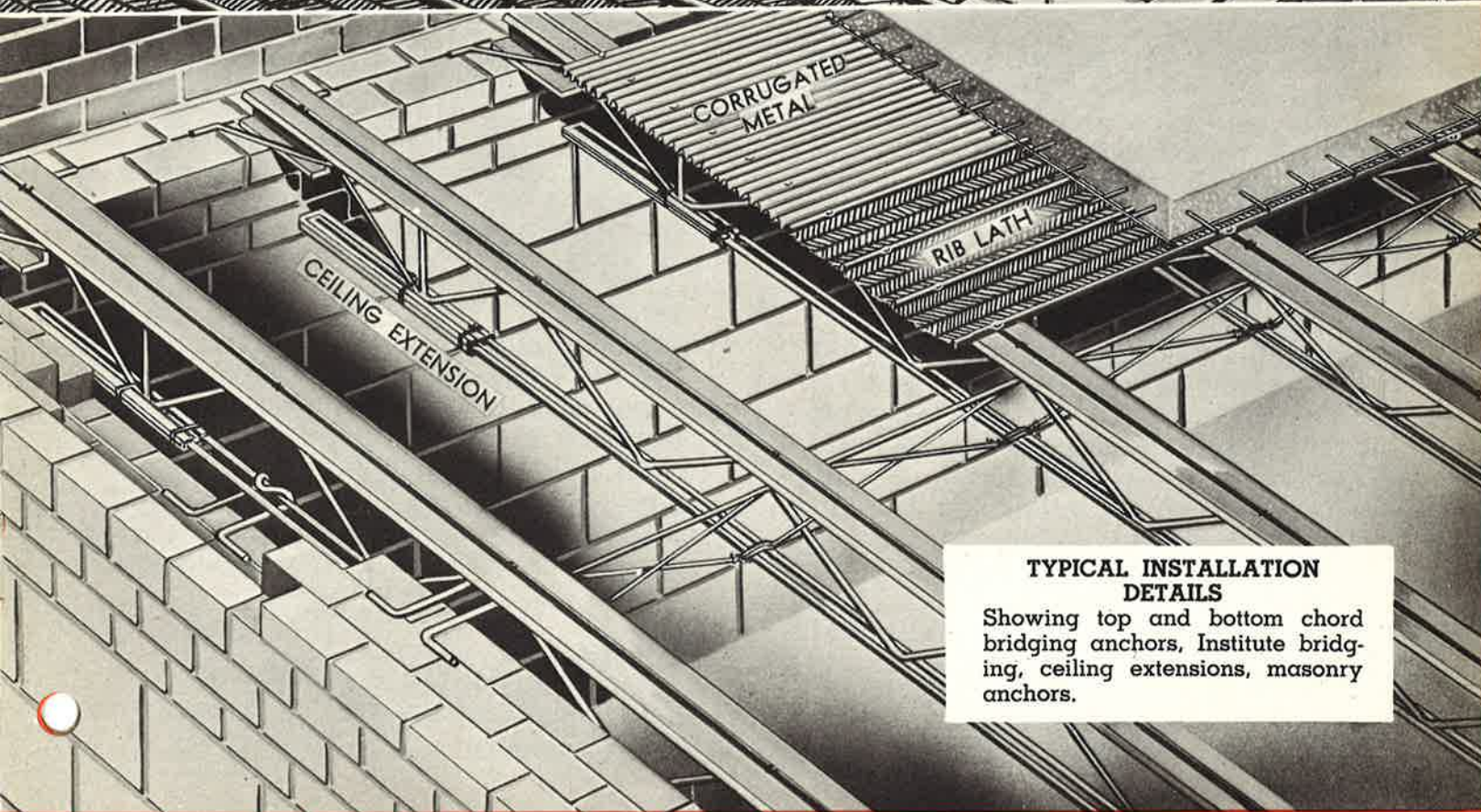


Anchoring and Bridging Details



FRAMING OPENINGS

Header angle is hung from trimmer joists, vertical leg facing away from wall as shown.



TYPICAL INSTALLATION DETAILS

Showing top and bottom chord bridging anchors, Institute bridging, ceiling extensions, masonry anchors.

DEAD LOAD REFERENCE TABLES

Material	Lbs. per Sq. Ft.
Joists—actual wgt. or not less than	3
Concrete Fl. per sq. in. of thickness	12
Plaster Ceiling, Metal Lath	10
Wood Floor Finish or 1" Roof Sheath.	3
2½" Poured Gypsum Roof Deck	13
Steel Deck—3; plus Built-up Roofing	8
Trusses and Bracing or Longspans	5
Purlins	2

PARTITIONS WEIGHT PER SQUARE FOOT

Material	Unplastered	Plastered
3" Clay Tile	17	27
4" Clay Tile	18	28
6" Clay Tile	26	36
3" Gypsum Tile	13½	21½
4" Gypsum Tile	17	25
6" Gypsum Tile	21½	29½
4" Brick	40	48
8" Brick	80	88
Metal Lath & Studs		18½
Wood Studs		18

LIVE LOAD REFERENCE TABLES

Live loads used in design shall be in accordance with architects' specifications, local or state regulations. In the absence of all of these the minimum live load used shall be as follows:

	Lbs. per Sq. Ft.
Apartments	40
Assembly Halls, fixed seats	80
Assembly Halls, movable seats	125
Attics not used for hab. or storage	30
Churches, fixed seats	80
Churches, movable seats	125
Dwellings	40
Garages, floor joists shall not be spaced more than 18" apart and top slab shall not be less than 3" thick	125
Hospitals, Asylums, Convents and Detention Buildings (Bed & Living room floors)	40
Same (public space, 1st fl. & cor.)	80
Hotels & Clubs, liv. room floors	40
Same (1st floor, cor. & dining rm.)	80
Municipal Buildings, Court Houses, Libraries, Museums (cor., pub. rms.)	100
Same (private offices)	50
Office Buildings (first floor)	100
Office Buildings (private offices)	50
Restaurants	80
Schools (fixed seats)	50

Schools (corridors, entrances, etc.)	80
Stores	100
Theatres (Auditorium)	80
Mercantile, Mfg., not less than	100
Roofs, South of Latitude 37°	20
Between 37° and 45°	30
North of Latitude 45°	40

Except that in high altitudes, loads shall be taken as 10 pounds greater than given above.

NAILING MATERIALS TO V JOISTS

FLOOR COVERING MATERIALS

Metal Lath and Corrugated Steel Sheets are attached with large head roofing nails.

Wood Subflooring is nailed with No. 7 Screw Size Spiral nails through top of board. Finished flooring is nailed into subflooring with regular finishing nails.

BUTTING BOARDS AT NAILING GROOVE

Boards may be sawed at 45° angle and 8d nail driven into points extending over nailing groove. Boards may be sawed square and a Scotch Clip used, driving points into adjoining boards and an 8d nail through center hole into nailing groove. Some builders use a washer and an 8d nail to clamp down ends, others drive an 8d nail into groove and bend over head into butting ends.

ROOF COVERING MATERIALS

Wood Sheathing is attached with 8d nails. Precast slabs, plank or other prefabricated board roofing are attached with clips or cement in the regular way. The wide flat surface is especially convenient for this type of roofing.

Metal decking is welded to the steel top chord.

BRIDGING

All joists shall be fastened in place and permanent bridging installed before any construction load, except the necessary workmen to install bridging, is placed upon joists. Bridging lines shall not exceed seven foot centers. Steel joists carrying a wood deck use the wood deck as the top member of the bridging system.

PAINTING

All joists to receive one coat of protective paint by dipping or spraying before shipment.

MACOMBER V BAR JOIST LOADING TABLE

PROPERTIES AND ALLOWABLE TOTAL LOADS IN POUNDS PER LINEAR FOOT

Joist Size	Nomi- nal Depth	Resisting Moment in Inch Pounds	Max. End Reaction in Lbs.	SPAN IN FEET																																								Joist Size																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
				4'-0"	5'-0"	6'-0"	7'-0"	8'-0"	9'-0"	10'-0"	11'-0"	12'-0"	13'-0"	14'-0"	15'-0"	16'-0"	17'-0"	18'-0"	19'-0"	20'-0"	21'-0"	22'-0"	23'-0"	24'-0"	25'-0"	26'-0"	27'-0"	28'-0"	29'-0"	30'-0"	31'-0"	32'-0"	33'-0"	34'-0"	35'-0"	36'-0"	37'-0"	38'-0"	39'-0"	40'-0"	41'-0"	42'-0"	43'-0"		44'-0"																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
81	8"	29,500	1600	800	640	530	402	308	243	197	162	137	116	100	87	77																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											

Joists marked * are outside the range of sizes included in the Steel Joist Institute standard types. However, they are designed in accordance with the Steel Joist Institute Engineering Standards.

The first or first two digits of joist symbol designate nominal depth of joist in inches. Last digit designates comparative weight. Each joist has a span flexibility of 1'-0". Length of joist is determined by net span. For example, a 102-17 will span from 17'-0" to 18'-0". Over 18'-0" to 19'-0" would take a 102-18 joist. Loadings above are based on Steel Joist Institute engineering standards.



MACOMBER LONGSPANS

**ENGINEERED BY MACOMBER
FOR EACH LOAD AND SPAN**

32' TO 96'

THESE LONGSPANS ARE DESIGNED IN ACCORDANCE WITH
THE SPECIFICATIONS OF THE STEEL JOIST INSTITUTE
AND THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION

Macomber Longspans provide the designer and builder with structural units which are practical from a cost standpoint, structurally sound in design and completely adaptable to the designing and framing conditions encountered in most structures.

This adaptability is demonstrated in the excellent selection provided the designer in loadings for a given span; the wide variety of types to successfully handle all drainage conditions and maintain level ceiling attachment; the possibility of framing longspans with column connections into the primary structure; the fitness of these structural members where a central production unit is flanked on both sides with leantos and the fast erection you get in a building reduced to the absolute simplicity of a Macomber Longspan job.



Your Macomber Representative can
give you detailed information and
valuable suggestions. Call him.

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